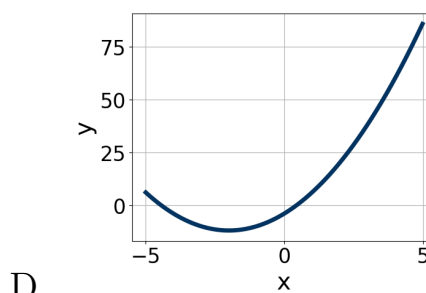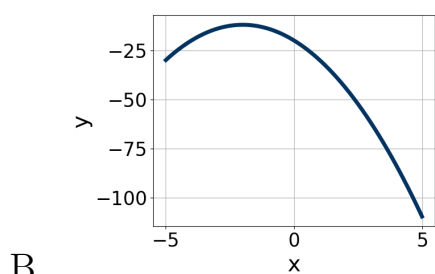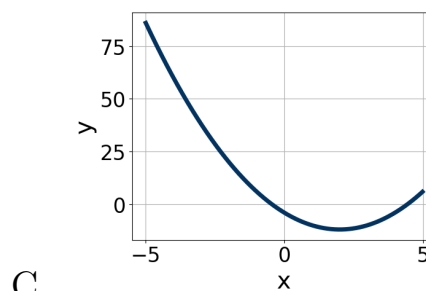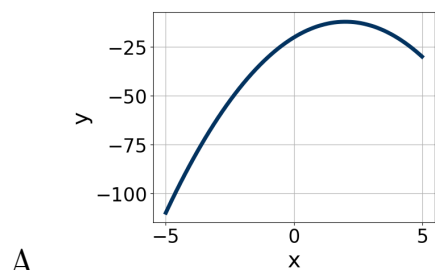1. Graph the equation below.

$$f(x) = -(x + 2)^2 - 12$$

A.

C.

B.

D.

E. None of the above.

---

2. Factor the quadratic below. Then, choose the intervals that contain the constants in the form $(ax + b)(cx + d); b \leq d$.

$$36x^2 - 60x + 25$$

A. $a \in [17.82, 18.15]$, $b \in [-11, -2]$, $c \in [1.94, 3.43]$, and $d \in [-5, -3]$

B. $a \in [-0.25, 1.19]$, $b \in [-31, -21]$, $c \in [0.36, 1.88]$, and $d \in [-32, -29]$

C. $a \in [1.53, 3.89]$, $b \in [-11, -2]$, $c \in [17.71, 18.48]$, and $d \in [-5, -3]$

D. $a \in [5.77, 6.01]$, $b \in [-11, -2]$, $c \in [5.38, 6.44]$, and $d \in [-5, -3]$
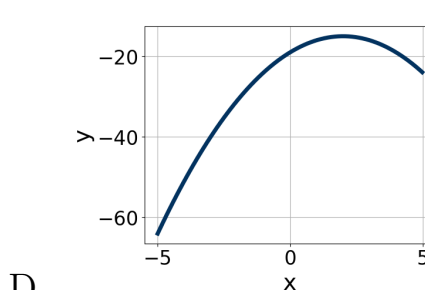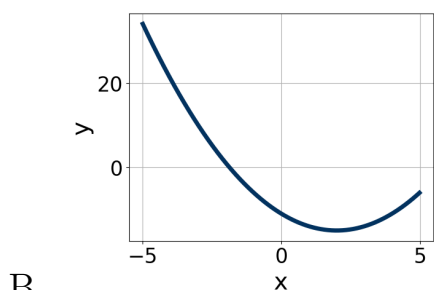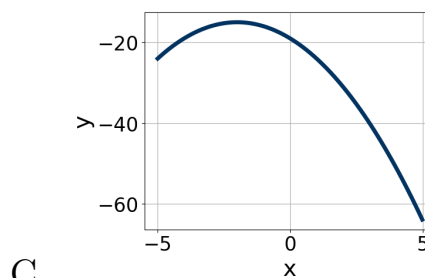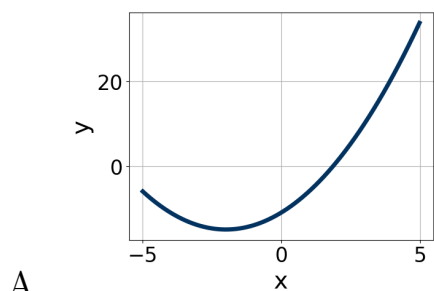
E. None of the above.

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3. Factor the quadratic below. Then, choose the intervals that contain the constants in the form $(ax + b)(cx + d); b \leq d$.

$$54x^2 - 75x + 25$$

A. $a \in [17.5, 20.9]$, $b \in [-5, -2]$, $c \in [1.7, 3.1]$, and $d \in [-5, -4]$

B. $a \in [8, 9.6]$, $b \in [-5, -2]$, $c \in [5.7, 7.9]$, and $d \in [-5, -4]$

C. $a \in [2.4, 4.5]$, $b \in [-5, -2]$, $c \in [17.2, 21.4]$, and $d \in [-5, -4]$

D. $a \in [0.3, 2]$, $b \in [-45, -39]$, $c \in [-0.1, 2.7]$, and $d \in [-32, -29]$

E. None of the above.

4. Graph the equation below.

$$f(x) = -(x - 2)^2 - 15$$

A.

C.

B.

D.

E. None of the above.

5. Solve the quadratic equation below. Then, choose the intervals that the solutions belong to, with $x_1 \leq x_2$ (if they exist).

$$-12x^2 - 10x + 5 = 0$$

A. $x_1 \in [-0.5, 0.7]$ and $x_2 \in [0.5, 2]$

B. $x_1 \in [-6.2, -2.8]$ and $x_2 \in [12.2, 14.3]$

C. $x_1 \in [-1.5, -0.4]$ and $x_2 \in [-0.3, 1]$

D. $x_1 \in [-20.1, -18]$ and $x_2 \in [16.5, 18.7]$

E. There are no Real solutions.

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6. Solve the quadratic equation below. Then, choose the intervals that the solutions belong to, with $x_1 \leq x_2$ (if they exist).

$$20x^2 - 12x - 4 = 0$$

A. $x_1 \in [-21.27, -20.75]$ and $x_2 \in [21.6, 22.6]$

B. $x_1 \in [-4.87, -4.48]$ and $x_2 \in [15, 18.5]$

C. $x_1 \in [-1.53, -0.44]$ and $x_2 \in [0.1, 0.4]$

D. $x_1 \in [-0.54, 0.22]$ and $x_2 \in [0.6, 2.1]$

E. There are no Real solutions.

---

7. Solve the quadratic equation below. Then, choose the intervals that the solutions x_1 and x_2 belong to, with $x_1 \leq x_2$.

$$20x^2 - 69x + 54 = 0$$

A. $x_1 \in [0.71, 0.75]$ and $x_2 \in [3.14, 4.04]$

B. $x_1 \in [0.58, 0.61]$ and $x_2 \in [3.76, 4.87]$

C. $x_1 \in [23.99, 24.03]$ and $x_2 \in [44.08, 45.72]$

D. $x_1 \in [1.16, 1.22]$ and $x_2 \in [1.85, 2.93]$

E. $x_1 \in [0.45, 0.46]$ and $x_2 \in [5.51, 6.52]$

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8. Solve the quadratic equation below. Then, choose the intervals that the solutions x_1 and x_2 belong to, with $x_1 \leq x_2$.

$$15x^2 + 38x + 24 = 0$$

A. $x_1 \in [-2.78, -2.65]$ and $x_2 \in [-0.62, -0.51]$

B. $x_1 \in [-2.6, -1.67]$ and $x_2 \in [-0.74, -0.61]$

C. $x_1 \in [-6.56, -5.86]$ and $x_2 \in [-0.27, -0.26]$

D. $x_1 \in [-20.18, -19.34]$ and $x_2 \in [-18.08, -17.99]$

E. $x_1 \in [-1.67, -0.95]$ and $x_2 \in [-1.29, -1.18]$

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9. Write the equation of the graph presented below in the form $f(x) = ax^2 + bx + c$, assuming $a = 1$ or $a = -1$. Then, choose the intervals that a, b, and c belong to.
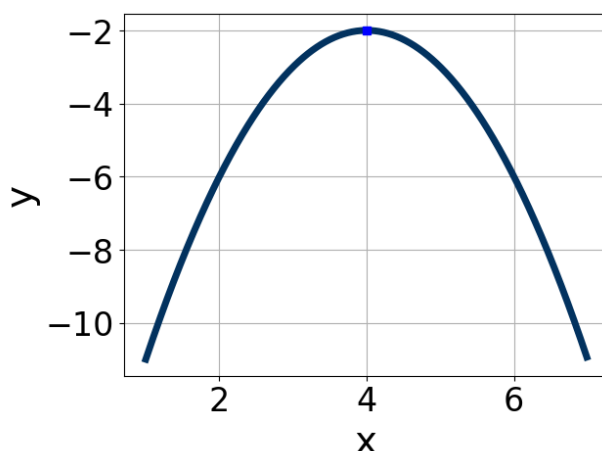
A. $a \in [-1.6, -0.8]$, $b \in [7, 13]$, and $c \in [-19, -17]$

B. $a \in [-1.6, -0.8]$, $b \in [-8, -5]$, and $c \in [-15, -11]$

C. $a \in [-1.6, -0.8]$, $b \in [-8, -5]$, and $c \in [-19, -17]$

D. $a \in [-0.2, 1.6]$, $b \in [7, 13]$, and $c \in [13, 18]$

E. $a \in [-0.2, 1.6]$, $b \in [-8, -5]$, and $c \in [13, 18]$

---

10. Write the equation of the graph presented below in the form $f(x) = ax^2 + bx + c$, assuming $a = 1$ or $a = -1$. Then, choose the intervals that a, b, and c belong to.
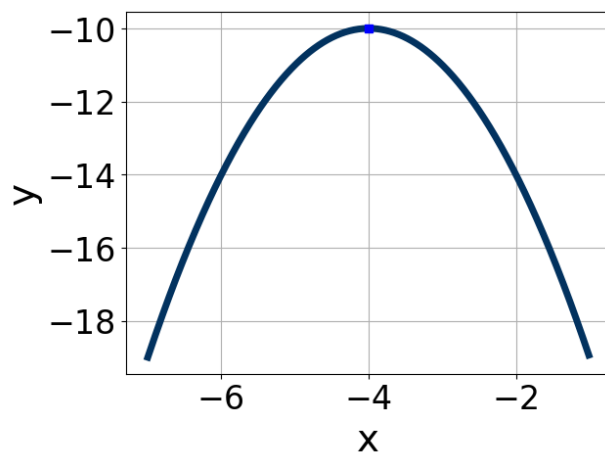
A. $a \in [1, 3]$, $\quad b \in [-10, -7]$, and $\quad c \in [5, 9]$

B. $a \in [1, 3]$, $\quad b \in [6, 12]$, and $\quad c \in [5, 9]$

C. $a \in [-3, 0]$, $\quad b \in [6, 12]$, and $\quad c \in [-7, -1]$

D. $a \in [-3, 0]$, $\quad b \in [6, 12]$, and $\quad c \in [-26, -23]$

E. $a \in [-3, 0]$, $\quad b \in [-10, -7]$, and $\quad c \in [-26, -23]$